IN THE CLAIMS:

Please cancel claims 10-11, 15, 23-24 and 28 without prejudice or disclaimer, and amend claims 1, 13, 16-18, 26, and 29-31 as follows:

1. (Currently Amended) A biochemical reaction detection apparatus, comprising;

a first membrane of no more than 20 μm thick;

a heat draining layer shaped in a mesh provided on one side of said first membrane;

a plurality of islands provided on said one side of said first membrane, each space of the mesh having at least one of said plurality of islands being formed therein;

probe cells for immobilizing probes for detecting biochemical reactions, each of said probe cells being provided on a side opposite to said one side of said first membrane corresponding to one of the islands directly through a cross section of the first membrane; and

a cover placed on top of the probe cells for accommodating a sample solution layer between the cover and said side opposite to said one side of said first membrane covering all of the probe cells,

wherein said islands are spaced from each other with intervals filled with air, and each of the islands includes a temperature controller for heating and temperature-controlling a corresponding one of said probe cells independently so that ~~the~~ temperature of the sample solution is controlled independently probe cell by probe cell.

2. (Original) The biochemical reaction detection apparatus according to claim 1, wherein the interval between each of said islands is 50 μm or longer.

3. (Original) The biochemical reaction detection apparatus according to claim 1, wherein the interval between each of said islands is 100 μm or longer.

4. (Previously Presented) The biochemical reaction detection apparatus according to claim 1, wherein said first membrane has a heat conductivity of 10 w/mk (watt/(meter*kelvin)) or less.

5-8. (Cancelled)

9. (Previously Presented) The biochemical reaction detection apparatus according to claim 1, wherein said first membrane is made of a material or a composite material selected from a group consisting of silicon nitride, silicon oxide, aluminum oxide and Ta_2O_5.

10-11. (Cancelled)

12. (Previously Presented) The biochemical reaction detection apparatus according to claim 1, wherein said first membrane is 5 μm thick or thinner.

13 (Currently Amended) The biochemical reaction detection apparatus according to claim 1, wherein the heat draining layer functions as heat ~~circuits~~ sinks provided ~~are installed~~ among said islands.

14. (Currently Amended) The biochemical reaction detection apparatus to claim 1, wherein the heat draining layer includes a thermal conductor layer~~s are formed among said islands for draining heat~~.

15. (Cancelled)

16. (Currently Amended) The biochemical reaction detection apparatus according to claim 13, wherein the heat draining layer is ~~heat circuits are~~ made from Si, Au, Ag or Cu.

17. (Currently Amended) The biochemical reaction detection apparatus according to claim 13, wherein a distance between one of said islands and one of the heat ~~circuits~~ sinks is 10 – 500 μm.

18. (Currently Amended) A biochemical reaction detection apparatus, comprising:

a first membrane of no more than 20 μm thick, a first side thereof being provided with a sample solution layer;

a heat draining layer shaped in a mesh provided on a second side of said first membrane opposite to the first side of said first membrane;

a plurality of islands provided on [[a]] said second side of said first membrane, each space of the mesh having at least one of said plurality of islands being formed therein ~~opposite to the first side of said first membrane~~; and

probe cells for immobilizing probes for detecting biochemical reactions, each of said probe cells being provided on the first side of said first membrane corresponding to one of the islands directly through a cross section of said first membrane, each of said probe cells being set to contact with said sample solution layer,

wherein said islands are spaced from each other with intervals filled with air, and each of the islands includes a temperature controller for heating and temperature-controlling a corresponding one of said probe cells independently so that ~~the~~ a temperature of the sample solution is controlled independently probe cell by probe cell.

19. (Previously Presented) The biochemical reaction detection apparatus according to claim 18, wherein the interval between each of said islands is 50 μm or longer.

20. (Previously Presented) The biochemical reaction detection apparatus according to claim 18, wherein the interval between each of said islands is 100 μm or longer.

21. (Previously Presented) The biochemical reaction detection apparatus according to claim 18, wherein said first membrane has a heat conductivity of 10 w/mk (watt/(meter*kelvin)) or less.

22. (Previously Presented) The biochemical reaction detection apparatus according to claim 18, wherein said first membrane is made of a material or a composite material selected from a group consisting of silicon nitride, silicon oxide, aluminum oxide and Ta_2O_5.

23-24. (Cancelled)

25. (Previously Presented) The biochemical reaction detection apparatus according to claim 18, wherein said first membrane is 5 μm thick or thinner.

26. (Currently Amended) The biochemical reaction detection apparatus according to claim 18, wherein the thermal conductor layer functions as heat ~~circuits~~ sinks provided ~~are installed~~ among said islands.

27. (Currently Amended) The biochemical reaction detection apparatus to claim 18, wherein the thermal conductor ~~layers are~~ layer drains heat from ~~formed among~~ said islands ~~for draining heat~~.

28. (Cancelled)

29. (Currently Amended) The biochemical reaction detection apparatus according to claim 26, wherein the thermal conductor layer is ~~heat circuits are~~ made from Si, Au, Ag or Cu.

30. (Currently Amended) The biochemical reaction detection apparatus according to claim 26, wherein a distance between one of said islands and one of the heat ~~circuits~~ sinks is 10 – 500 μm.

31. (Currently Amended) A biochemical reaction detection apparatus, comprising:

a first membrane, a first side thereof being set to be provided with a sample solution layer;

a plurality of islands provided on a second side of said first membrane opposite to the first side of said first membrane; and

probe cells for immobilizing probes for detecting biochemical reactions, each of said probe cells being provided on the first side of said first membrane corresponding to one of the islands directly through a cross section of said first membrane, each of said probe cells being set to contact with said sample solution layer; and

reaction products of ~~polylysine and~~ functional groups not binding with the probes on the first side of said first membrane and polylysine covering said first membrane other than areas provided with said probe cells,

wherein said islands are spaced from each other with intervals filled with air, and each of the islands includes a temperature controller for heating and temperature-controlling a corresponding one of said probe cells independently so that ~~the~~ temperature of the sample solution is controlled independently probe cell by probe cell.